

SEQUENCE LISTING

<110> Université Laval
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De Koninck, Paul
Coull, Jeffrey

<120> CNS chloride modulation and uses thereof

<130> 85409-29

<150> US 60/470,885

<151> 2003-05-16

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<170> PatentIn version 3.2

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Glu	Glu	Glu	Met	Asp	Thr	Ser	Pro	Met	Val	Ser	Ser	Leu	Leu	Ser	Gly	
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Leu	Ala	Asn	Tyr	Thr	Asn	Leu	Pro	Gln	Gly	Ser	Arg	Glu	His	Glu	Glu	
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cca gcc atg gcc atc ttc aag gca gaa gat gcc agt ggg gag gca gca Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala 210 215 220	672
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Val Glu Arg Ser Gly Met Thr Ser Val Gly Leu Ala Asp Gly Thr Pro	
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Ile Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe	
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Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr Gly Ile Met Ala	
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Thr Gly Thr Ile Leu Ala Ile Ala Thr Thr Ser Ala Val Tyr Ile Ser	
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Ser Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg Asp	
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Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala	
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Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly	
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Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Cys Ile	
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Cys Glu Ile Gly Ile Leu Ile Ala Ser Leu Asp Glu Val Ala Pro Ile	
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Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val	
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Val Arg Leu Asn Glu Val Ile	Val Lys Lys Ser Arg	Asp Ala Lys	
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Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg
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Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe
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Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala
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Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu
 275 280 285

Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys
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Leu Ala Trp Glu Gly Asn Glu Thr Val Thr Thr Arg Leu Trp Gly Leu
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Phe Cys Ser Ser Arg Phe Leu Asn Ala Thr Cys Asp Glu Tyr Phe Thr
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Arg Asn Asn Val Thr Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly
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 580 585 590

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Ala Gly Leu Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly Ala Glu Lys Glu
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Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
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Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro

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Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His		
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Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu		
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Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Glu Asn His Pro		
705	710	715
Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu		
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Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp		
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Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His		
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Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp		
	770	775
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His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala		
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		795
		800
Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly		
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		815
Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val		
	820	825
		830
His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His		
	835	840
		845
Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met		
	850	855
		860
Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr		
	865	870
		875
		880
His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser		
	885	890
		895

Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
 900 905 910

Ser Gln Ile Leu Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
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Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
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Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
 945 950 955 960

Gly Asp Ser Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
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Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu
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Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp
 995 1000 1005

Thr Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro
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Val Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu
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Trp Glu Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala
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Val Arg Leu Asn Glu Val Ile Val Lys Lys Ser Arg Asp Ala Lys
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Leu Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly
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Asp Glu Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu His Leu
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Met Leu Asn Asn Leu Thr Asp Cys Glu
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gac ggc gat ggg gga gcc aac ccc ggt gat ggc aac ccc aaa gag agc 160
Asp Gly Asp Gly Gly Ala Asn Pro Gly Asp Gly Asn Pro Lys Glu Ser
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agt ccc ttc atc aac agc acg gac acg gag aag ggc aga gag tac gat 208
Ser Pro Phe Ile Asn Ser Thr Asp Thr Glu Lys Gly Arg Glu Tyr Asp
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ggc agg aac atg gcc ctg ttt gag gag gag atg gac acc agc ccc atg 256
Gly Arg Asn Met Ala Leu Phe Glu Glu Glu Met Asp Thr Ser Pro Met
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gta tcc tcc ctg ctc agt ggg ctg gcc aac tac acc aac cta ccc cag 304
Val Ser Ser Leu Leu Ser Gly Leu Ala Asn Tyr Thr Asn Leu Pro Gln
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gga agt aga gag cat gaa gaa gca gaa aat aat gag ggt gga aaa aag 352
Gly Ser Arg Glu His Glu Glu Ala Glu Asn Asn Glu Gly Gly Lys Lys
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Lys Pro Val Gln Ala Pro Arg Met Gly Thr Phe Met Gly Val Tyr Leu
90 95 100 105
ccg tgc ctg cag aac atc ttt ggt gtc atc ctc ttc ctg cgg ctc acg 448
Pro Cys Leu Gln Asn Ile Phe Gly Val Ile Leu Phe Leu Arg Leu Thr
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tgg gtg gtg ggc atc gcg ggc atc atg gag tcc ttc tgt atg gtc ttc 496
Trp Val Val Gly Ile Ala Gly Ile Met Glu Ser Phe Cys Met Val Phe
125 130 135
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Ile Cys Cys Ser Cys Thr Met Leu Thr Ala Ile Ser Met Ser Ala Ile
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gca acc aat ggt gtt gtg cct gct ggt ggc tgg tac tac atg att tcc Ala Thr Asn Gly Val Val Pro Ala Gly Gly Ser Tyr Tyr Met Ile Ser 155 160 165	592
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acc tgt gat gag tac ttc acc cga aac aat gtc aca gag atc cag ggc Thr Cys Asp Glu Tyr Phe Thr Arg Asn Asn Val Thr Glu Ile Gln Gly 330 335 340 345	1120
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Ser Asp Met Thr Ser Tyr Phe Thr Leu Leu Val Gly Ile Tyr Phe Pro	
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Ser Val Thr Gly Ile Met Ala Gly Ser Asn Arg Ser Gly Asp Leu Arg	
410 415 420 425	
gat gcc cag aag tct atc cct act gga act atc ctg gcc att gct acc	1408
Asp Ala Gln Lys Ser Ile Pro Thr Gly Thr Ile Leu Ala Ile Ala Thr	
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Thr Ser Ala Val Tyr Ile Ser Ser Val Val Leu Phe Gly Ala Cys Ile	
445 450 455	
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Glu Gly Val Val Leu Arg Asp Lys Phe Gly Glu Ala Val Asn Gly Asn	
460 465 470	
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Leu Val Val Gly Thr Leu Ala Trp Pro Ser Pro Trp Val Ile Val Ile	
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Leu Gln Val Phe Gly His Gly Lys Ala Asn Gly Glu Pro Thr Trp Ala	
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Leu Leu Leu Thr Ala Cys Ile Cys Glu Ile Gly Ile Leu Ile Ala Ser	
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cat acg aag aac tgg agg ccc cag ctg ctg gtg ctg gtg cgt gtg gac	2128
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Thr Phe Leu Asp Asn His Pro Gln Ala Gln Arg Ala Glu Glu Ser Ile	
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765 770 775	
aac tgg agg cag aag gag gat cat cag aca tgg agg aac ttc atc gaa	2464
Asn Trp Arg Gln Lys Glu Asp His Gln Thr Trp Arg Asn Phe Ile Glu	
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ctg gtc cgg gaa act aca gcc ggc cac ctc gcc ctg ctg gtc acc aag	2512
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Asn Val Ser Met Phe Pro Gly Asn Pro Glu Arg Phe Ser Glu Gly Ser	
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Ile Asp Val Trp Trp Ile Val His Asp Gly Gly Met Leu Met Leu Leu	

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ccc ttc ctg ctg cga cac cac aag gtc tgg agg aaa tgc aaa atg cgg	2656																			
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925 930 935																				
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940 945 950																				
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955 960 965																				
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Glu Val Gln Leu Ile His Asp Gln Ser Ala Pro Ser Cys Pro Ser Ser																				
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Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg
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Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe
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Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val Val Gly Ile Ala Gly
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Ile Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met
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Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe
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Gly Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Gly
 180 185 190

Ala Met Tyr Ile Leu Gly Thr Ile Glu Ile Leu Leu Ala Tyr Leu Phe
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Pro Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala
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Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys
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Met Ala Thr Val Val Phe Val Gly Val Lys Tyr Val Asn Lys Phe Ala
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Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu
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Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys
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Phe Cys Ser Ser Arg Leu Leu Asn Ala Thr Cys Asp Glu Tyr Phe Thr

325

330

335

Arg Asn Asn Val Thr Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly
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Leu Ile Lys Glu Asn Leu Trp Ser Ser Tyr Leu Thr Lys Gly Val Ile
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Val Glu Arg Arg Gly Met Pro Ser Val Gly Leu Ala Asp Gly Thr Pro
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Val Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe
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Thr Leu Leu Val Gly Ile Tyr Phe Pro Ser Val Thr Gly Ile Met Ala
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Gly Ser Asn Arg Ser Gly Asp Leu Arg Asp Ala Gln Lys Ser Ile Pro
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Thr Gly Thr Ile Leu Ala Ile Ala Thr Thr Ser Ala Val Tyr Ile Ser
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Ser Val Val Leu Phe Gly Ala Cys Ile Glu Gly Val Val Leu Arg Asp
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Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala
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Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr Cys
485 490 495

Gly Ala Gly Leu Gln Ser Leu Thr Gly Ala Pro Arg Leu Leu Gln Ala
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Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly
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Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Leu Thr Ala Cys Ile
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Cys Glu Ile Gly Ile Leu Ile Ala Ser Leu Asp Glu Val Ala Pro Ile
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Leu Ser Met Phe Phe Leu Met Cys Tyr Met Phe Val Asn Leu Ala Cys
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Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg
 580 585 590

Tyr Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser Leu Cys Leu Ala
 595 600 605

Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Val Ala Met Leu Ile
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Ala Gly Leu Ile Tyr Lys Tyr Ile Glu Tyr Arg Gly Ala Glu Lys Glu
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Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
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Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His
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Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu
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Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp
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Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His
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Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly
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Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val
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His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His
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Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
 850 855 860

Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr
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His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser
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Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
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Ser Gln Ile Leu Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
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Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
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Asn Pro Ala Asn Pro Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
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Cys Asp Asn Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
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Pro Glu Gly Glu Arg Glu Thr Asp Pro Glu Val His Leu Thr Trp Thr
 995 1000 1005

Lys Asp Lys Ser Val Ala Glu Lys Asn Lys Gly Pro Ser Pro Val
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Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly Asp
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Tyr Ser
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 Gly Asp Gly Asn Pro Lys Glu Ser Ser Pro Phe Ile Asn Ser Thr Asp
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acg gag aag ggg aga gag tat gat ggc agg aac atg gcc ctg ttt gag	262
Thr Glu Lys Gly Arg Glu Tyr Asp Gly Arg Asn Met Ala Leu Phe Glu	
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Glu Glu Met Asp Thr Ser Pro Met Val Ser Ser Leu Leu Ser Gly Leu	
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Ala Asn Tyr Thr Asn Leu Pro Gln Gly Ser Lys Glu His Glu Glu Ala	
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gaa aac aat gag ggc gga aag aag aag ccg gtg cag gcc oca cgc atg	406
Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg Met	
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ggc acc ttc atg ggc gtg tac ctc ccg tgc ctg cag aac atc ttt ggt	454
Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe Gly	
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Val Ile Leu Phe Leu Arg Leu Thr Trp Val Val Gly Ile Ala Gly Ile	
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atg gag tcc ttc tgc atg gtc ttc atc tgc tgc tcc tgc acg atg ctc	550
Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met Leu	
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aca gcc att tcc atg agc gca att gca acc aat ggt gtt gtg cct gct	598
Thr Ala Ile Ser Met Ser Ala Ile Ala Thr Asn Gly Val Val Pro Ala	
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Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe Gly	
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Gly Ala Val Gly Leu Cys Phe Tyr Leu Gly Thr Thr Phe Ala Gly Ala	
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Met Tyr Ile Leu Gly Thr Ile Glu Ile Leu Leu Ala Tyr Leu Phe Pro	
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gcg atg gcc atc ttc aag gca gaa gat gcc agt ggg gag gca gcc gcc	790
Ala Met Ala Ile Phe Lys Ala Glu Asp Ala Ser Gly Glu Ala Ala Ala	
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atg ttg aat aac atg cgg gtg tat ggc acc tgt gtg ctc acc tgc atg	838
Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys Met	
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gcc acc gta gtc ttt gtg ggc gtc aag tac gtg aac aag ttt gcc ctg	886
Ala Thr Val Val Phe Val Gly Val Lys Tyr Val Asn Lys Phe Ala Leu	
245 250 255	
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Val	Ile	Lys	Ser	Ala	Phe	Asp	Pro	Pro	Asn	Phe	Pro	Ile	Cys	Leu	Leu	
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Gly	Asn	Arg	Thr	Leu	Ser	Arg	His	Gly	Phe	Asp	Val	Cys	Ala	Lys	Leu	
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Ala	Trp	Glu	Gly	Asn	Glu	Thr	Val	Thr	Thr	Arg	Leu	Trp	Gly	Leu	Phe	
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tgt	tcc	tcc	cgc	ctc	ctc	aat	gcc	acc	tgt	gat	gag	tac	ttc	acc	cga	1126
Cys	Ser	Ser	Arg	Leu	Leu	Asn	Ala	Thr	Cys	Asp	Glu	Tyr	Phe	Thr	Arg	
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aac	aat	gtc	aca	gag	atc	cag	ggc	att	cct	ggg	gct	gca	agt	ggc	ctc	1174
Asn	Asn	Val	Thr	Glu	Ile	Gln	Gly	Ile	Pro	Gly	Ala	Ala	Ser	Gly	Leu	
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atc	aaa	gag	aac	ctg	tgg	agt	tcc	tac	ctg	acc	aag	ggg	gtg	atc	gtg	1222
Ile	Lys	Glu	Asn	Leu	Trp	Ser	Ser	Tyr	Leu	Thr	Lys	Gly	Val	Ile	Val	
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Glu	Arg	Arg	Gly	Met	Pro	Ser	Val	Gly	Leu	Ala	Asp	Gly	Thr	Pro	Val	
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Asp	Met	Asp	His	Pro	Tyr	Val	Phe	Ser	Asp	Met	Thr	Ser	Tyr	Phe	Thr	
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tcg	aac	cgg	tcc	gga	gac	ctg	cgg	gat	gcc	cag	aag	tct	atc	cct	act	1414
Ser	Asn	Arg	Ser	Gly	Asp	Leu	Arg	Asp	Ala	Gln	Lys	Ser	Ile	Pro	Thr	
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Gly	Thr	Ile	Leu	Ala	Ile	Ala	Thr	Thr	Ser	Ala	Val	Tyr	Ile	Ser	Ser	
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gtt	gtt	ctg	ttc	gga	gcc	tgc	atc	gaa	ggg	gtc	gtc	cta	cgg	gac	aag	1510
Val	Val	Leu	Phe	Gly	Ala	Cys	Ile	Glu	Gly	Val	Val	Leu	Arg	Asp	Lys	
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ttt	ggg	gaa	gct	gtg	aat	ggc	aat	ctg	gtg	gtg	ggc	acc	ctg	gcc	tgg	1558
Phe	Gly	Glu	Ala	Val	Asn	Gly	Asn	Leu	Val	Val	Gly	Thr	Leu	Ala	Trp	
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cct	tct	cct	tgg	gtc	att	gtc	ata	ggc	tct	ttc	ttc	tct	acc	tgc	gga	1606
Pro	Ser	Pro	Trp	Val	Ile	Val	Ile	Gly	Ser	Phe	Phe	Ser	Thr	Cys	Gly	

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gct	gga	cta	cag	agc	ctc	aca	ggg	gcc	cca	cgc	ctg	ctg	cag	gcc	atc	1654
Ala	Gly	Leu	Gln	Ser	Leu	Thr	Gly	Ala	Pro	Arg	Leu	Leu	Gln	Ala	Ile	
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tcc	cgg	gat	ggc	ata	gtg	ccc	ttc	ctg	cag	gtc	ttt	ggc	cat	ggc	aaa	1702
Ser	Arg	Asp	Gly	Ile	Val	Pro	Phe	Leu	Gln	Val	Phe	Gly	His	Gly	Lys	
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gcc	aac	gga	gag	cca	acc	tgg	gcg	ctg	ctg	ctg	act	gcc	tgc	atc	tgt	1750
Ala	Asn	Gly	Glu	Pro	Thr	Trp	Ala	Leu	Leu	Leu	Thr	Ala	Cys	Ile	Cys	
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gag	atc	ggc	atc	ctc	atc	gcc	tcc	ctg	gat	gag	gtc	gcc	cct	atc	ctt	1798
Glu	Ile	Gly	Ile	Leu	Ile	Ala	Ser	Leu	Asp	Glu	Val	Ala	Pro	Ile	Leu	
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Ser	Met	Phe	Phe	Leu	Met	Cys	Tyr	Met	Phe	Val	Asn	Leu	Ala	Cys	Ala	
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Val	Gln	Thr	Leu	Leu	Arg	Thr	Pro	Asn	Trp	Arg	Pro	Arg	Phe	Arg	Tyr	
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Tyr	His	Trp	Thr	Leu	Ser	Phe	Leu	Gly	Met	Ser	Leu	Cys	Leu	Ala	Leu	
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atg	ttc	att	tgc	tcc	tgg	tat	tat	gcg	ctg	gta	gct	atg	ctc	atc	gct	1990
Met	Phe	Ile	Cys	Ser	Trp	Tyr	Tyr	Ala	Leu	Val	Ala	Met	Leu	Ile	Ala	
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Leu	Arg	Leu	Glu	Glu	Gly	Pro	Pro	His	Thr	Lys	Asn	Trp	Arg	Pro	Gln	
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Leu	Leu	Val	Leu	Val	Arg	Val	Asp	Gln	Asp	Gln	Asn	Val	Val	His	Pro	
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cag	ctg	ctg	tcc	ttg	acc	tcc	cag	ctc	aag	gca	ggg	aag	ggc	ctg	acc	2230
Gln	Leu	Leu	Ser	Leu	Thr	Ser	Gln	Leu	Lys	Ala	Gly	Lys	Gly	Leu	Thr	
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att	gtg	ggc	tct	gtc	ctt	gag	ggc	acc	ttt	ctg	gac	aac	cac	cct	cag	2278
Ile	Val	Gly	Ser	Val	Leu	Glu	Gly	Thr	Phe	Leu	Asp	Asn	His	Pro	Gln	
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Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp Gly	
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Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His Asn	
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Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala Gly	
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His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly Asn	
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Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val His	
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Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg Ser	
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Gln Ile Leu Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg Glu	
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Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys Asn	
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<212> PRT

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Glu Glu Glu Met Asp Thr Ser Pro Met Val Ser Ser Leu Leu Ser Gly
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Leu Ala Asn Tyr Thr Asn Leu Pro Gln Gly Ser Lys Glu His Glu Glu
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Ala Glu Asn Asn Glu Gly Gly Lys Lys Lys Pro Val Gln Ala Pro Arg
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Met Gly Thr Phe Met Gly Val Tyr Leu Pro Cys Leu Gln Asn Ile Phe
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Gly Val Ile Leu Phe Leu Arg Leu Thr Trp Val Val Gly Ile Ala Gly
115 120 125

Ile Met Glu Ser Phe Cys Met Val Phe Ile Cys Cys Ser Cys Thr Met
130 135 140

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Ala Gly Gly Ser Tyr Tyr Met Ile Ser Arg Ser Leu Gly Pro Glu Phe
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Ala Met Tyr Ile Leu Gly Thr	Ile Glu Ile Leu Leu Ala Tyr Leu Phe			
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Pro Ala Met Ala Ile Phe Lys	Ala Glu Asp Ala Ser Gly Glu Ala Ala			
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Ala Met Leu Asn Asn Met Arg Val Tyr Gly Thr Cys Val Leu Thr Cys				
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Leu Val Phe Leu Gly Cys Val Ile Leu Ser Ile Leu Ala Ile Tyr Ala				
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Gly Val Ile Lys Ser Ala Phe Asp Pro Pro Asn Phe Pro Ile Cys Leu				
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Leu Gly Asn Arg Thr Leu Ser Arg His Gly Phe Asp Val Cys Ala Lys				
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Leu Ala Trp Glu Gly Asn Glu Thr Val Thr Thr Arg Leu Trp Gly Leu				
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Val Asp Met Asp His Pro Tyr Val Phe Ser Asp Met Thr Ser Tyr Phe				
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Lys Phe Gly Glu Ala Val Asn Gly Asn Leu Val Val Gly Thr Leu Ala
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Trp Pro Ser Pro Trp Val Ile Val Ile Gly Ser Phe Phe Ser Thr Cys
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Ile Ser Arg Asp Gly Ile Val Pro Phe Leu Gln Val Phe Gly His Gly
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Lys Ala Asn Gly Glu Pro Thr Trp Ala Leu Leu Thr Ala Cys Ile
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Ala Val Gln Thr Leu Leu Arg Thr Pro Asn Trp Arg Pro Arg Phe Arg
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Tyr Tyr His Trp Thr Leu Ser Phe Leu Gly Met Ser Leu Cys Leu Ala
 595 600 605

Leu Met Phe Ile Cys Ser Trp Tyr Tyr Ala Leu Val Ala Met Leu Ile
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Trp Gly Asp Gly Ile Arg Gly Leu Ser Leu Ser Ala Ala Arg Tyr Ala
645 650 655

Leu Leu Arg Leu Glu Glu Gly Pro Pro His Thr Lys Asn Trp Arg Pro
660 665 670

Gln Leu Leu Val Leu Val Arg Val Asp Gln Asp Gln Asn Val Val His
675 680 685

Pro Gln Leu Leu Ser Leu Thr Ser Gln Leu Lys Ala Gly Lys Gly Leu
690 695 700

Thr Ile Val Gly Ser Val Leu Glu Gly Thr Phe Leu Asp Asn His Pro
705 710 715 720

Gln Ala Gln Arg Ala Glu Glu Ser Ile Arg Arg Leu Met Glu Ala Glu
725 730 735

Lys Val Lys Gly Phe Cys Gln Val Val Ile Ser Ser Asn Leu Arg Asp
740 745 750

Gly Val Ser His Leu Ile Gln Ser Gly Gly Leu Gly Gly Leu Gln His
755 760 765

Asn Thr Val Leu Val Gly Trp Pro Arg Asn Trp Arg Gln Lys Glu Asp
770 775 780

His Gln Thr Trp Arg Asn Phe Ile Glu Leu Val Arg Glu Thr Thr Ala
785 790 795 800

Gly His Leu Ala Leu Leu Val Thr Lys Asn Val Ser Met Phe Pro Gly
805 810 815

Asn Pro Glu Arg Phe Ser Glu Gly Ser Ile Asp Val Trp Trp Ile Val
820 825 830

His Asp Gly Gly Met Leu Met Leu Leu Pro Phe Leu Leu Arg His His
835 840 845

Lys Val Trp Arg Lys Cys Lys Met Arg Ile Phe Thr Val Ala Gln Met
850 855 860

Asp Asp Asn Ser Ile Gln Met Lys Lys Asp Leu Thr Thr Phe Leu Tyr
 865 870 875 880

His Leu Arg Ile Thr Ala Glu Val Glu Val Val Glu Met His Glu Ser
 885 890 895

Asp Ile Ser Ala Tyr Thr Tyr Glu Lys Thr Leu Val Met Glu Gln Arg
 900 905 910

Ser Gln Ile Leu Lys Gln Met His Leu Thr Lys Asn Glu Arg Glu Arg
 915 920 925

Glu Ile Gln Ser Ile Thr Asp Glu Ser Arg Gly Ser Ile Arg Arg Lys
 930 935 940

Asn Pro Ala Asn Thr Arg Leu Arg Leu Asn Val Pro Glu Glu Thr Ala
 945 950 955 960

Cys Asp Asn Glu Glu Lys Pro Glu Glu Glu Val Gln Leu Ile His Asp
 965 970 975

Gln Ser Ala Pro Ser Cys Pro Ser Ser Ser Pro Ser Pro Gly Glu Glu
 980 985 990

Pro Glu Gly Glu Gly Glu Thr Asp Pro Glu Lys Val His Leu Thr Trp
 995 1000 1005

Thr Lys Asp Lys Ser Ala Ala Gln Lys Asn Lys Gly Pro Ser Pro
 1010 1015 1020

Val Ser Ser Glu Gly Ile Lys Asp Phe Phe Ser Met Lys Pro Glu
 1025 1030 1035

Trp Glu Asn Leu Asn Gln Ser Asn Val Arg Arg Met His Thr Ala
 1040 1045 1050

Val Arg Leu Asn Glu Val Ile Val Asn Lys Ser Arg Asp Ala Lys
 1055 1060 1065

Leu Val Leu Leu Asn Met Pro Gly Pro Pro Arg Asn Arg Asn Gly
 1070 1075 1080

Asp Glu Asn Tyr Met Glu Phe Leu Glu Val Leu Thr Glu Gln Leu

1085

1090

1095

Asp Arg Val Met Leu Val Arg Gly Gly Gly Arg Glu Val Ile Thr
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Ile Tyr Ser
1115

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<223> Synthetic oligonucleotide

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